

Patient Safety Indicator 04 (PSI 04) Death Rate among Surgical Inpatients with Serious Treatable Complications

October 2016

Provider-Level Indicator

Type of Score: Rate

Prepared by:

Agency for Healthcare Research and Quality

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DESCRIPTION

In-hospital deaths per 1,000 surgical discharges, among patients ages 18 through 89 years or obstetric patients, with serious treatable complications (deep vein thrombosis/ pulmonary embolism, pneumonia, sepsis, shock/cardiac arrest, or gastrointestinal hemorrhage/acute ulcer). Includes metrics for the number of discharges for each type of complication. Excludes cases transferred to an acute care facility. A risk adjusted rate is available. PSI 04 uses stratum specific risk models which are integrated to calculate an overall risk adjusted rate.

[NOTE: The software provides the rate per hospital discharge. However, common practice reports the measure as per 1,000 discharges. The user must multiply the rate obtained from the software by 1,000 to report in-hospital deaths per 1,000 hospital discharges.]

NUMERATOR

Overall

Number of deaths (DISP=20) among cases meeting the inclusion and exclusion rules for the denominator.

STRATUM_DVT: DEEP VEIN THROMBOSIS/PULMONARY EMBOLISM (DVT/PE)

Number of deaths (DISP=20) among cases meeting the inclusion and exclusion rules for the denominator.

STRATUM_PNEUMONIA: PNEUMONIA

Number of deaths (DISP=20) among cases meeting the inclusion and exclusion rules for the denominator.

STRATUM_SEPSIS: SEPSIS

Number of deaths (DISP=20) among cases meeting the inclusion and exclusion rules for the denominator.

STRATUM_SHOCK: SHOCK/CARDIAC ARREST

Number of deaths (DISP=20) among cases meeting the inclusion and exclusion rules for the denominator.

STRATUM_GI_HEM: GASTROINTESTINAL (GI) HEMORRHAGE/ACUTE ULCER

Number of deaths (DISP=20) among cases meeting the inclusion and exclusion rules for the denominator.

DENOMINATOR OVERALL

Surgical discharges, for patients ages 18 through 89 years or MDC 14 (pregnancy, childbirth, and puerperium), with all of the following:

- any-listed ICD-9-CM procedure codes for an operating room procedure; and
- the principal procedure occurring within 2 days of admission or an admission type of elective (ATYPE=3); and
- meet the inclusion and exclusion criteria for STRATUM_DVT (deep vein thrombosis or pulmonary embolism), STRATUM_PNEUMONIA (pneumonia), STRATUM_SEPSIS (sepsis), STRATUM_SHOCK (shock or cardiac arrest), or STRATUM_GI_HEM (gastrointestinal hemorrhage or acute ulcer).

Surgical discharges are defined by specific MS-DRG codes and ICD-9-CM codes indicating “major operating room procedures.”

[*Appendix A – Operating Room Procedure Codes*](#)

[*Appendix E - Surgical Discharge MS-DRGs \(for discharges on or after*](#)

DENOMINATOR OVERALL EXCLUSIONS

Exclude cases:

- transferred to an acute care facility (DISP = 2)
- with missing discharge disposition (DISP=missing), gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing), or principal diagnosis (DX1=missing)

In the event that a discharge record meets the denominator criteria for several strata, the software assigns the record to the one (and only one) candidate stratum that has the highest risk of the outcome (i.e., observed mortality rate in the AHRQ QI POA reference population). In other words, if a record meets the criteria to be in the denominator for both STRATUM_SEPSIS and STRATUM_SHOCK, and if shock and cardiac arrest has a higher observed mortality rate in the reference population data, then the software would assign the record to STRATUM_SHOCK, and would not assign it to STRATUM_SEPSIS.

For PSI 04, prioritization to ensure mutual exclusivity for the strata is as follows:

STRATUM_SHOCK

STRATUM_SEPSIS

STRATUM_PNEUMONIA

STRATUM_DVT

STRATUM_GI_HEM

DENOMINATOR STRATUM_DVT

Surgical discharges, for patients ages 18 through 89 years or MDC 14 (pregnancy, childbirth, and puerperium), with all of the following:

- any-listed ICD-9-CM procedure codes for an operating room procedure; and
- the principal procedure occurring within 2 days of admission or an admission type of elective (ATYPE=3); and
- any secondary ICD-9-CM diagnosis codes for deep vein thrombosis or pulmonary embolism.

Surgical discharges are defined by specific MS-DRG codes and ICD-9-CM codes indicating “major operating room procedures.”

[Appendix A – Operating Room Procedure Codes](#)

[Appendix E - Surgical Discharge MS-DRGs \(for discharges on or after October 1, 2007\)](#)

Pulmonary embolism or deep vein thrombosis diagnosis codes (for discharges on or after October 1, 2009): (FTR2DXB)

4151	PULMONARY EMBOLISM AND INFARCTION (no longer valid)	45119	PHLEBITIS AND THORBOPHLEBITIS, OTHER DEEP VESSEL OF LOWER EXTREMITIES
41511	IATROGENIC PULMONARY EMBOLISM	45181	ILIAC VEIN
41513	SADDLE EMBOLUS OF PULMONARY ARTERY	45340	DVT-EMBLSM LOWER EXT NOS
41519	OTHER PULMONARY EMBOLISM AND INFARCTION	45341	DVT-EMB PROX LOWER EXT
45111	PHLEBITIS AND THORBOPHLEBITIS FEMORAL VEIN (DEEP) (SUPERFICIAL)		

Pulmonary embolism or deep vein thrombosis diagnosis codes (for discharges prior to October 1, 2009): (FTR2DX)

4151	PULMONARY EMBOLISM AND INFARCTION (no longer valid)	45181	ILIAC VEIN
41511	IATROGENIC PULMONARY EMBOLISM	4519	UNSPECIFIED SITE
41513	SADDLE EMBOLUS OF PULMONARY ARTERY	45340	DVT-EMBLSM LOWER EXT NOS
41519	OTHER PULMONARY EMBOLISM AND INFARCTION	45341	DVT-EMB PROX LOWER EXT
45111	PHLEBITIS AND THORBOPHLEBITIS FEMORAL VEIN (DEEP) (SUPERFICIAL)	4538	OTHER VENOUS EMBOLISM AND THROMBOSIS OF OTHER SPECIFIED VEINS
45119	PHLEBITIS AND THORBOPHLEBITIS, OTHER DEEP VESSEL OF LOWER EXTREMITIES	4539	OTHER VENOUS EMBOLISM AND THROMBOSIS OF UNSPECIFIED SITE
4512	PHLEBITIS AND THORBOPHLEBITIS, LOWER EXTREMITIES		

DENOMINATOR EXCLUSIONS STRATUM_DVT

Exclude cases:

- with a principal ICD-9-CM diagnosis code for deep vein thrombosis or pulmonary embolism
- with a principal ICD-9-CM diagnosis code for abortion-related or postpartum obstetric pulmonary embolism
- transferred to an acute care facility (DISP = 2)
- with missing discharge disposition (DISP=missing), gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing), or principal diagnosis (DX1=missing)

Abortion-related or postpartum obstetric pulmonary embolism diagnosis codes: (OBEMBOL)

63460	SPON ABORT W EMBOL-UNSP	63760	AB NOS W EMBOLISM-UNSP
63461	SPON ABORT W EMBOL-INC	63761	AB NOS W EMBOLISM-INC
63462	SPON ABORT W EMBOL-COMP	63762	AB NOS W EMBOLISM-COMP
63560	LEGAL ABORT W EMBOL-UNSP	6386	ATTEMP ABORT W EMBOLISM
63561	LEGAL ABORT W EMBOL-INC	6396	POSTABORTION EMBOLISM
63562	LEGAL ABORT W EMBOL-COMP	67320	OBSTETRICAL BLOOD-CLOT EMBOLISM
63660	ILLEG AB W EMBOLISM-UNSP	67321	OBSTETRICAL BLOOD-CLOT EMBOLISM
63661	ILLEG AB W EMBOLISM-INC	67322	OBSTETRICAL BLOOD-CLOT EMBOLISM
63662	ILLEG AB W EMBOLISM-COMP	67323	OBSTETRICAL BLOOD-CLOT EMBOLISM
		67324	OBSTETRICAL BLOOD-CLOT EMBOLISM

DENOMINATOR STRATUM_PNEUMONIA

Surgical discharges, for patients ages 18 through 89 years or MDC 14 (pregnancy, childbirth, and puerperium), with all of the following:

- any-listed ICD-9-CM procedure codes for an operating room procedure; and
- the principal procedure occurring within 2 days of admission or an admission type of elective (ATYPE=3); and
- any secondary ICD-9-CM diagnosis codes for pneumonia.

Surgical discharges are defined by specific MS-DRG codes and ICD-9-CM codes indicating “major operating room procedures.”

[Appendix A – Operating Room Procedure Codes](#)

[Appendix E - Surgical Discharge MS-DRGs \(for discharges on or after October 1, 2007\)](#)

Pneumonia diagnosis codes: (FTR3DX)

481	PNEUMOCOCCAL PNEUMONIA [STREPTOCOCCUS PNEUMONIAE PNEUMONIA]	48249	STAPH PNEUMONIA NEC
4820	K. PNEUMONIAE PNEUMONIA	4828	BACTERIAL PNEUMONIA NEC
4821	PSEUDOMONAL PNEUMONIA	48281	PNEUMONIA ANAEROBES
4822	H.INFLUENZAE PNEUMONIA	48282	PNEUMONIA E COLI
4823	STREPTOCOCCAL PNEUMONIA	48283	PNEUMO OTH GRM-NEG BACT
48230	STREPTOCOCCAL PNEUMN NOS	48284	LEGIONNAIRES DISEASE
48231	PNEUMONIA STRPTOCOCCUS A	48289	PNEUMONIA OTH SPCF BACT
48232	PNEUMONIA STRPTOCOCCUS B	4829	BACTERIAL PNEUMONIA NOS
48239	PNEUMONIA OTH STREP	485	BRONCHOPNEUMONIA, ORGANISM UNSPECIFIED
4824	STAPHYLOCOCCAL PNEUMONIA	486	PNEUMONIA, ORGANISM UNSPECIFIED
48240	STAPHYLOCOCCAL PNEU NOS	5070	DUE TO INHALATION OF FOOD OR VOMITUS
48241	METH SUS PNEUM D/T STAPH	514	PULMONARY CONGESTION AND HYPOSTASIS
48242	METH RES PNEU D/T STAPH		

DENOMINATOR EXCLUSIONS STRATUM_PNEUMONIA

Exclude cases:

- with a principal ICD-9-CM diagnosis code for pneumonia
- with a principal ICD-9-CM diagnosis code for respiratory complications
- with any-listed ICD-9-CM diagnosis codes for viral pneumonia or influenza
- with any-listed ICD-9-CM diagnosis codes or any-listed ICD-9-CM procedure codes for immunocompromised state
- with any-listed ICD-9-CM procedure codes for lung cancer
- MDC 4 (diseases/disorders of respiratory system)
- transferred to an acute care facility (DISP = 2)
- with missing discharge disposition (DISP=missing), gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing), or principal diagnosis (DX1=missing)

Appendix I – Immunocompromised State Diagnosis and Procedure Codes***Respiratory complications diagnosis codes: (FTR3EXA)***

9973	RESPIRATORY COMPLICATIONS (end 2008)	99732	POSTPROC ASPIRATION PNEU
99731	VENTL TR ASSOC PNEUMONIA	99739	RESPITORY COMP NEC

Viral pneumonia or influenza diagnosis codes: (FTR3EXB)

4800	ADENOVIRAL PNEUMONIA	4870	INFLUENZA W/ PNEUMONIA
4801	RESP SYNCYT VIRAL PNEUM	4871	FLU W RESP MANIFEST NEC
4802	PARAINFLUENZA VIRAL PNEUM	4878	FLU W MANIFESTATION NEC
4803	PNEUMONIA DUE TO SARS	488	FLU D/T AVIAN FLU VIRUS (end 2009)
4808	VIRAL PNEUMONIA NEC	4880	INFLUENZA DUE TO IDENTIFIED AVIAN FLU (end 2010)
4809	VIRAL PNEUMONIA NOS	48801	FLU DT IDEN AVIAN W PNEU
483	PNEUMONIA ORGANISM NEC (end 1992)	48802	FLU DT AVIAN W OTH RESP
4830	PNEU MYCPLSM PNEUMONIAE	48809	FLU DT AVIAN MANIFEST NEC
4831	PNEUMONIA D/T CHLAMYDIA	4881	INFLUENZA DUE TO IDENTIFIED NOVEL H1N1 INFLUENZA VIRUS (end 2010)
4838	PNEUMON OTH SPEC ORGNSM	48811	FLU DT 2009 H1N1 W PNEU
4841	PNEUM W CYTOMEG INCL DIS	48812	FLU-2009 H1N1 W OTH RESP
4843	PNEUMONIA IN WHOOP COUGH	48819	FLU-2009 H1N1 W OTH MAN
4845	PNEUMONIA IN ANTHRAX	48881	FLU DT NVL A VRS W PNEU

4846	PNEUMONIA IN ASPERGILLOSIS	48882	FLU DT NVL A W OTH RESP
4847	PNEUMONIA IN OTH SYS MYCOSES	48889	FLU DT NOVEL A W OTH MAN
4848	PNEUMONIA IN INFECT DIS NEC		

Lung cancer procedure codes: (LUNGCIP)

3230	THORACOSCOPIC SURGERY	3249	LOBECTOMY OF LUNG NEC
3239	OTH SEG LUNG RESECT NOS	3250	THORACOSCOPIC SURGERY
3241	THORACOSCOPIC SURGERY	3259	OTHER PNEUMONECTOMY NOS

DENOMINATOR STRATUM_SEPSIS

Surgical discharges, for patients ages 18 through 89 years or MDC 14 (pregnancy, childbirth, and puerperium), with all of the following:

- any-listed ICD-9-CM procedure codes for an operating room procedure; and
- the principal procedure occurring within 2 days of admission or an admission type of elective (ATYPE=3); and
- any secondary ICD-9-CM diagnosis codes for sepsis.

Surgical discharges are defined by specific MS-DRG codes and ICD-9-CM codes indicating “major operating room procedures.”

[Appendix A – Operating Room Procedure Codes](#)

[Appendix E - Surgical Discharge MS-DRGs \(for discharges on or after October 1, 2007\)](#)

Sepsis diagnosis codes: (FTR4DX)

0380	STREPTOCOCCAL SEPTICEMIA	03842	ESCHERICHIA COLI
0381	STAPHYLOCOCCAL SEPTICEMIA (end 2000)	03843	PSEUDOMONAS
03810	STAPHYLOCOCCAL SEPTICEMIA, UNSPECIFIED	03844	SERRATIA
03811	METH SUSC STAPH AUR SEPT	03849	SEPTICEMIA DUE TO OTHER GRAM-NEGATIVE ORGANISMS
03812	MRSA SEPTICEMIA	0388	OTHER SPECIFIED SEPTICEMIAS
03819	OTHER STAPHYLOCOCCAL SEPTICEMIA	0389	UNSPECIFIED SEPTICEMIA
0382	PNEUMOCOCCAL SEPTICEMIA (STREPTOCOCCUS PNEUMONIAE SEPTICEMIA)	78552	SEPTIC SHOCK
0383	SEPTICEMIA DUE TO ANAEROBES	99591	SYSTEMIC INFLAMMATORY RESPONSE SYNDROME DUE TO INFECTIOUS PROCESS WITHOUT ORGAN DYSFUNCTION
03840	GRAM-NEGATIVE ORGANISM, UNSPECIFIED	99592	SYSTEMIC INFLAMMATORY RESPONSE SYNDROME DUE TO INFECTIOUS PROCESS WITH ORGAN DYSFUNCTION
03841	HEMOPHILUS INFLUENZAE	99802	POSTOPERATIVE SHOCK, SEPTIC

DENOMINATOR EXCLUSIONS STRATUM_SEPSIS

Exclude cases:

- with a principal ICD-9-CM diagnosis code for sepsis
- with a principal ICD-9-CM diagnosis code for infection
- with any-listed ICD-9-CM diagnosis codes or any-listed ICD-9-CM procedure codes for immunocompromised state
- with a length of stay of less than 4 days
- transferred to an acute care facility (DISP = 2)
- with missing discharge disposition (DISP=missing), gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing), or principal diagnosis (DX1=missing)

[*Appendix F – Infection Diagnosis Codes*](#)

[*Appendix I – Immunocompromised State Diagnosis and Procedure Codes*](#)

DENOMINATOR STRATUM_SHOCK

Surgical discharges, for patients ages 18 through 89 years or MDC 14 (pregnancy, childbirth, and puerperium), with all of the following:

- any-listed ICD-9-CM procedure codes for an operating room procedure; and
- the principal procedure occurring within 2 days of admission or an admission type of elective (ATYPE=3); and
- any secondary ICD-9-CM diagnosis codes or any-listed ICD-9-CM procedure codes for shock or cardiac arrest

Surgical discharges are defined by specific MS-DRG codes and ICD-9-CM codes indicating “major operating room procedures.”

[Appendix A – Operating Room Procedure Codes](#)

[Appendix E - Surgical Discharge MS-DRGs \(for discharges on or after October 1, 2007\)](#)

Shock or cardiac arrest diagnosis codes: (FTR5DX)

4275	CARDIAC ARREST	66913	OBSTETRIC SHOCK-ANTEPAR
63450	SPONTANEOUS ABORTION UNSPECIFIED COMPLICATED BY SHOCK	66914	OBSTETRIC SHOCK-POSTPART
63451	SPONTANEOUS ABORTION UNSPECIFIED COMPLICATED BY SHOCK	7855	SHOCK NOS
63452	SPONTANEOUS ABORTION UNSPECIFIED COMPLICATED BY SHOCK	78550	SHOCK, UNSPECIFIED
63550	LEGALLY INDUCED ABORTION UNSPECIFIED COMPLICATED BY SHOCK	78551	CARDIOGENIC SHOCK
63551	LEGALLY INDUCED ABORTION UNSPECIFIED COMPLICATED BY SHOCK	78559	SHOCK WITHOUT MENTION OF TRAUMA, OTHER
63552	LEGALLY INDUCED ABORTION UNSPECIFIED COMPLICATED BY SHOCK	7991	RESPIRATORY ARREST
63650	ILLEGAL ABORTION UNSPECIFIED COMPLICATED BY SHOCK	9950	OTHER ANAPHYLACTIC SHOCK
63651	ILLEGAL ABORTION UNSPECIFIED COMPLICATED BY SHOCK	9954	SHOCK DUE TO ANESTHESIA
63652	ILLEGAL ABORTION UNSPECIFIED COMPLICATED BY SHOCK	9980	POSTOPERATIVE SHOCK /** NOT VALID AFTER OCTOBER1, 2011

63750	LEGALLY UNSPECIFIED TYPE OF ABORTION UNSPECIFIED COMPLICATED BY SHOCK	99800	POSTOPERATIVE SHOCK, UNSPECIFIED
63751	LEGALLY UNSPECIFIED ABORTION INCOMPLETE COMPLICATED BY SHOCK	99801	POSTOPERATIVE SHOCK, CARDIOGENIC
63752	LEGALLY UNSPECIFIED ABORTION COMPLETE COMPLICATED BY SHOCK	99809	POSTOPERATIVE SHOCK, OTHER
6385	FAILED ATTEMPTED ABORTION COMPLICATED BY SHOCK	9994	ANAPHYLACTIC SHOCK DUE TO SERUM
6395	COMPLICATIONS FOLLOWING ABORTION AND ECTOPIC AND MOLAR PREGNANCIES, SHOCK	99941	ANAPHYLACTIC REACTION DUE TO ADMINISTRATION OF BLOOD AND BLOOD PARTICLES
66910	OBSTETRIC SHOCK-UNSPEC	99942	ANAPHYLACTIC REACTION DUE TO VACCINATION
66911	OBSTETRIC SHOCK-DELIVER	99949	ANAPHYLACTIC REACTION DUE TO OTHER SERUM
66912	OBSTET SHOCK-DELIV W P/P		

Shock or cardiac arrest (resuscitation) procedure codes: : (FTR5PR)

9393	NONMECHANICAL METHODS OF RESUSCITATION	9963	CLOSED CHEST CARDIAC MASSAGE
9960	CARDIOPULMONARY RESUSCITATION, NOS		

DENOMINATOR EXCLUSIONS STRATUM_SHOCK

Exclude cases:

- with a principal ICD-9-CM diagnosis code for shock or cardiac arrest
- with a principal ICD-9-CM diagnosis code for trauma
- with a principal ICD-9-CM diagnosis code for hemorrhage
- with a principal ICD-9-CM diagnosis code for gastrointestinal hemorrhage
- with a principal ICD-9-CM diagnosis code for abortion-related shock
- MDC 4 (diseases/disorders of respiratory system)
- MDC 5 (diseases/disorders of circulatory system)
- transferred to an acute care facility (DISP = 2)
- with missing discharge disposition (DISP=missing), gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing), or principal diagnosis (DX1=missing)

Appendix G – Trauma Diagnosis Codes***Hemorrhage diagnosis codes: (HEMORID)***

2851	ACUTE POSTHEMORRHAGIC ANEMIA	9582	CERTAIN EARLY COMPLICATIONS OF TRAUMA, SECONDARY AND RECURRENT HEMORRHAGE
4590	OTHER DISORDERS OF CIRCULATORY SYSTEM, HEMORRHAGE, UNSPECIFIED	99811	HEMORRHAGE COMPLICATING A PROCEDURE
56881	HEMOPERITONEUM		

Gastrointestinal hemorrhage diagnosis codes: (GASTRID)

4560	ESOPHAGEAL VARICES WITH BLEEDING	53361	PEPTIC ULCER, SITE UNSPECIFIED, CHRONIC OR UNSPECIFIED WITH HEMORRHAGE AND PERFORATION - WITH OBSTRUCTION
45620	ESOPHAGEAL VARICES IN DISEASES CLASSIFIED ELSEWHERE WITH BLEEDING	53400	GASTROJEJUNAL ULCER, ACUTE WITH HEMORRHAGE - WITHOUT MENTION OF OBSTRUCTION
5307	GASTROESOPHAGEAL LACERATION- HEMORRHAGE SYNDROME	53401	GASTROJEJUNAL ULCER, ACUTE WITH HEMORRHAGE - WITH OBSTRUCTION
53021	ULCER OF ESOPHAGUS WITH BLEEDING	53420	GASTROJEJUNAL ULCER, ACUTE WITH HEMORRHAGE AND PERFORATION - WITHOUT MENTION OF OBSTRUCTION

53082	ESOPHAGEAL HEMORRHAGE	53421	GASTROJEJUNAL ULCER, ACUTE WITH HEMORRHAGE AND PERFORATION - WITH OBSTRUCTION
53100	GASTRIC ULCER ACUTE WITH HEMORRHAGE - WITHOUT MENTION OF OBSTRUCTION	53440	GASTROJEJUNAL ULCER, CHRONIC OR UNSPECIFIED WITH HEMORRHAGE - WITHOUT MENTION OF OBSTRUCTION
53101	GASTRIC ULCER ACUTE WITH HEMORRHAGE - WITH OBSTRUCTION	53441	GASTROJEJUNAL ULCER, CHRONIC OR UNSPECIFIED WITH HEMORRHAGE - WITH OBSTRUCTION
53120	GASTRIC ULCER ACUTE WITH HEMORRHAGE AND PERFORATION - WITHOUT MENTION OF OBSTRUCTION	53460	GASTROJEJUNAL ULCER, CHRONIC OR UNSPECIFIED WITH HEMORRHAGE AND PERFORATION - WITHOUT MENTION OF OBSTRUCTION
53121	GASTRIC ULCER, ACUTE WITH HEMORRHAGE AND PERFORATION - WITH OBSTRUCTION	53461	GASTROJEJUNAL ULCER, CHRONIC OR UNSPECIFIED WITH HEMORRHAGE AND PERFORATION - WITH OBSTRUCTION
53140	GASTRIC ULCER CHRONIC OR UNSPECIFIED WITH HEMORRHAGE - WITHOUT MENTION OF OBSTRUCTION	53501	GASTRITIS AND DUODENITIS, ACUTE GASTRITIS WITH HEMORRHAGE
53141	GASTRIC ULCER CHRONIC OR UNSPECIFIED WITH HEMORRHAGE - WITH OBSTRUCTION	53511	GASTRITIS AND DUODENITIS, ATROPHIC GASTRITIS WITH HEMORRHAGE
53160	GASTRIC ULCER CHRONIC OR UNSPECIFIED WITH HEMORRHAGE AND PERFORATION - WITHOUT MENTION OF OBSTRUCTION	53521	GASTRITIS AND DUODENITIS, GASTRIC MUCOSAL HYPERTROPHY, WITH HEMORRHAGE
53161	GASTRIC ULCER CHRONIC OR UNSPECIFIED WITH HEMORRHAGE AND PERFORATION - WITH OBSTRUCTION	53531	GASTRITIS AND DUODENITIS, ALCOHOLIC GASTRITIS, WITH HEMORRHAGE
53200	DUODENAL ULCER ACUTE WITH HEMORRHAGE - WITHOUT MENTION OF OBSTRUCTION	53541	GASTRITIS AND DUODENITIS, OTHER SPECIFIED GASTRITIS - WITH HEMORRHAGE
53201	DUODENAL ULCER ACUTE WITH HEMORRHAGE - WITH OBSTRUCTION	53551	GASTRITIS AND DUODENITIS, UNSPECIFIED GASTRITIS AND GASTRODUODENITIS - WITH HEMORRHAGE

53220	DUODENAL ULCER ACUTE WITH HEMORRHAGE AND PERFORATION - WITHOUT MENTION OF OBSTRUCTION	53561	GASTRITIS AND DUODENITIS, DUODENITIS - WITH HEMORRHAGE
53221	DUODENAL ULCER ACUTE WITH HEMORRHAGE AND PERFORATION - WITH OBSTRUCTION	53783	OTHER SPECIFIED DISORDERS OF STOMACH AND DUODENUM, ANGIODYSPLASIA OF STOMACH AND DUODENUM - WITH HEMORRHAGE
53240	DUODENAL ULCER CHRONIC OR UNSPECIFIED WITH HEMORRHAGE - WITHOUT MENTION OF OBSTRUCTION	53784	DIEULAFOY LESION (HEMORRHAGIC) OF STOMACH AND DUODENUM
53241	DUODENAL ULCER CHRONIC OR UNSPECIFIED WITH HEMORRHAGE - WITH OBSTRUCTION	56202	DIVERTICULOSIS OF SMALL INTESTINE -WITH HEMORRHAGE
53260	DUODENAL ULCER CHRONIC OR UNSPECIFIED WITH HEMORRHAGE AND PERFORATION - WITHOUT MENTION OF OBSTRUCTION	56203	DIVERTICULITIS OF SMALL INTESTINE -WITH HEMORRHAGE
53261	DUODENAL ULCER CHRONIC OR UNSPECIFIED WITH HEMORRHAGE AND PERFORATION - WITH OBSTRUCTION	56212	DIVERTICULOSIS OF COLON - WITH HEMORRHAGE
53300	PEPTIC ULCER, SITE UNSPECIFIED ACUTE WITH HEMORRHAGE - WITHOUT MENTION OF OBSTRUCTION	56213	DIVERTICULITIS OF COLON - WITH HEMORRHAGE
53301	PEPTIC ULCER, SITE UNSPECIFIED, ACUTE WITH HEMORRHAGE - WITH OBSTRUCTION	5693	HEMORRHAGE OF RECTUM AND ANUS
53320	PEPTIC ULCER, SITE UNSPECIFIED, ACUTE WITH HEMORRHAGE AND PERFORATION - WITHOUT MENTION OF OBSTRUCTION	56985	ANGIODYSPLASIA OF INTESTINE - WITH HEMORRHAGE
53321	PEPTIC ULCER, SITE UNSPECIFIED, ACUTE WITH HEMORRHAGE AND PERFORATION - WITH OBSTRUCTION	56986	DIEULAFOY LESION (HEMORRHAGIC) OF INTESTINE

53340	PEPTIC ULCER, SITE UNSPECIFIED CHRONIC OR UNSPECIFIED WITH HEMORRHAGE - WITHOUT MENTION OF OBSTRUCTION	5780	GASTROINTESTINAL HEMORRHAGE, HEMATEMESIS
53341	PEPTIC ULCER, SITE UNSPECIFIED, CHRONIC OR UNSPECIFIED WITH HEMORRHAGE - WITH OBSTRUCTION	5781	GASTROINTESTINAL HEMORRHAGE, BLOOD IN STOOL
53360	PEPTIC ULCER, SITE UNSPECIFIED, CHRONIC OR UNSPECIFIED WITH HEMORRHAGE AND PERFORATION -WITHOUT MENTION OF OBSTRUCTION	5789	GASTROINTESTINAL HEMORRHAGE, HEMORRHAGE OF GASTROINTESTINAL TRACT, UNSPECIFIED

Abortion-related shock diagnosis codes: (FTR5EX)

63450	SPON ABORT W SHOCK-UNSP	63651	ILLEG ABORT W SHOCK-INC
63451	SPON ABORT W SHOCK-INC	63652	ILLEG ABORT W SHOCK-COMP
63452	SPON ABORT W SHOCK-COMP	63750	ABORT NOS W SHOCK-UNSP
63550	LEGAL ABORT W SHOCK-UNSP	63751	ABORT NOS W SHOCK-INC
63551	LEGAL ABORT W SHOCK-INC	63752	ABORT NOS W SHOCK-COMP
63552	LEGAL ABORT W SHOCK-COMP	6385	ATTEM ABORTION W SHOCK
63650	ILLEG ABORT W SHOCK-UNSP		

DENOMINATOR STRATUM_GI_HEM

Surgical discharges, for patients ages 18 through 89 years or MDC 14 (pregnancy, childbirth, and puerperium), with all of the following:

- any-listed ICD-9-CM procedure codes for an operating room procedure; and
- the principal procedure occurring within 2 days of admission or an admission type of elective (ATYPE=3); and
- any secondary ICD-9-CM diagnosis codes for gastrointestinal hemorrhage or acute ulcer.

Surgical discharges are defined by specific MS-DRG codes and ICD-9-CM codes indicating “major operating room procedures.”

[Appendix A – Operating Room Procedure Codes](#)

[Appendix E - Surgical Discharge MS-DRGs \(for discharges on or after October 1, 2007\)](#)

Gastrointestinal hemorrhage or acute ulcer diagnosis codes: (FTR6DX)

4560	ESOPHAGEAL VARICES WITH BLEEDING	53390	SITE UNSPECIFIED UNSPECIFIED AS ACUTE OR CHRONIC, WITHOUT MENTION OF HEMORRHAGE OR PERFORATION - WITHOUT MENTION OF OBSTRUCTION
45620	ESOPHAGEAL VARICES IN DISEASES CLASSIFIED ELSEWHERE WITH BLEEDING	53391	SITE UNSPECIFIED UNSPECIFIED AS ACUTE OR CHRONIC, WITHOUT MENTION OF HEMORRHAGE OR PERFORATION - WITH OBSTRUCTION
5307	GASTROESOPHAGEAL LACERATION-HEMORRHAGE SYNDROME	53400	ACUTE WITH HEMORRHAGE - WITHOUT MENTION OF OBSTRUCTION
53082	ESOPHAGEAL HEMORRHAGE	53401	ACUTE WITH HEMORRHAGE - WITH OBSTRUCTION
53100	ACUTE WITH HEMORRHAGE - WITHOUT MENTION OF OBSTRUCTION	53410	ACUTE WITH PERFORATION - WITHOUT MENTION OF OBSTRUCTION
53101	ACUTE WITH HEMORRHAGE - WITH OBSTRUCTION	53411	ACUTE WITH PERFORATION - WITH OBSTRUCTION
53110	ACUTE WITH PERFORATION - WITHOUT MENTION OF OBSTRUCTION	53420	ACUTE WITH HEMORRHAGE AND PERFORATION - WITHOUT MENTION OF OBSTRUCTION
53111	ACUTE WITH PERFORATION - WITH OBSTRUCTION	53421	ACUTE WITH HEMORRHAGE AND PERFORATION - WITH OBSTRUCTION

53120	ACUTE WITH HEMORRHAGE AND PERFORATION - WITHOUT MENTION OF OBSTRUCTION	53430	ACUTE WITHOUT MENTION OF HEMORRHAGE OR PERFORATION - WITHOUT MENTION OF OBSTRUCTION
53121	ACUTE WITH HEMORRHAGE AND PERFORATION - WITH OBSTRUCTION	53431	ACUTE WITHOUT MENTION OF HEMORRHAGE OR PERFORATION - WITH OBSTRUCTION
53130	ACUTE WITHOUT MENTION OF HEMORRHAGE OR PERFORATION - WITHOUT MENTION OF OBSTRUCTION	53490	UNSPECIFIED AS ACUTE OR CHRONIC, WITHOUT MENTION OF HEMORRHAGE OR PERFORATION - WITHOUT MENTION OF OBSTRUCTION
53131	ACUTE WITHOUT MENTION OF HEMORRHAGE OR PERFORATION - WITH OBSTRUCTION	53491	UNSPECIFIED AS ACUTE OR CHRONIC, WITHOUT MENTION OF HEMORRHAGE OR PERFORATION - WITH OBSTRUCTION
53190	UNSPECIFIED AS ACUTE OR CHRONIC, WITHOUT MENTION OF HEMORRHAGE OR PERFORATION - WITHOUT MENTION OF OBSTRUCTION	53501	ACUTE GASTRITIS - WITH HEMORRHAGE
53191	UNSPECIFIED AS ACUTE OR CHRONIC, WITHOUT MENTION OF HEMORRHAGE OR PERFORATION - WITH OBSTRUCTION	53511	ATROPHIC GASTRITIS - WITH HEMORRHAGE
53200	ACUTE WITH HEMORRHAGE - WITHOUT MENTION OF OBSTRUCTION	53521	GASTRIC MUCOSAL HYPERTROPHY - WITH HEMORRHAGE
53201	ACUTE WITH HEMORRHAGE - WITH OBSTRUCTION	53531	ALCOHOLIC GASTRITIS - WITH HEMORRHAGE
53210	ACUTE WITH PERFORATION - WITHOUT MENTION OF OBSTRUCTION	53541	OTHER SPECIFIED GASTRITIS - WITH HEMORRHAGE
53211	ACUTE WITH PERFORATION - WITH OBSTRUCTION	53551	UNSPECIFIED GASTRITIS AND GASTRODUODENITIS - WITH HEMORRHAGE
53220	ACUTE WITH HEMORRHAGE AND PERFORATION - WITHOUT MENTION OF OBSTRUCTION	53561	DUODENITIS - WITH HEMORRHAGE
53221	ACUTE WITH HEMORRHAGE AND PERFORATION - WITH OBSTRUCTION	53783	ANGIODYSPLASIA OF STOMACH AND DUODENUM WITH HEMORRHAGE
53230	ACUTE WITHOUT MENTION OF HEMORRHAGE OR PERFORATION - WITHOUT MENTION OF OBSTRUCTION	53784	DIEULAFOY LESION (HEMORRHAGIC) OF STOMACH AND DUODENUM

53231	ACUTE WITHOUT MENTION OF HEMORRHAGE OR PERFORATION - WITH OBSTRUCTION	56202	DIVERTICULOSIS OF SMALL INTESTINE WITH HEMORRHAGE
53290	UNSPECIFIED AS ACUTE OR CHRONIC, WITHOUT MENTION OF HEMORRHAGE OR PERFORATION - WITHOUT MENTION OF OBSTRUCTION	56203	DIVERTICULITIS OF SMALL INTESTINE WITH HEMORRHAGE
53291	UNSPECIFIED AS ACUTE OR CHRONIC, WITHOUT MENTION OF HEMORRHAGE OR PERFORATION - WITH OBSTRUCTION	56212	DIVERTICULOSIS OF COLON WITH HEMORRHAGE
53300	SITE UNSPECIFIED ACUTE WITH HEMORRHAGE - WITHOUT MENTION OF OBSTRUCTION	56213	DIVERICULITIS OF COLON WITH HEMORRHAGE
53301	SITE UNSPECIFIED ACUTE WITH HEMORRHAGE - WITH OBSTRUCTION	5693	HEMORRHAGE OF RECTUM AND ANUS
53310	SITE UNSPECIFIED ACUTE WITH PERFORATION - WITHOUT MENTION OF OBSTRUCTION	56985	ANGIODYSPLASIA OF INTESTINE WITH HEMORRHAGE
53311	SITE UNSPECIFIED ACUTE WITH - PERFORATION WITH OBSTRUCTION	56986	DIEULAFOY LESION (HEMORRHAGIC) OF INTESTINE
53320	SITE UNSPECIFIED ACUTE WITH HEMORRHAGE AND PERFORATION - WITHOUT MENTION OF OBSTRUCTION	5780	HEMATEMESIS
53321	SITE UNSPECIFIED ACUTE WITH HEMORRHAGE AND PERFORATION - WITHOUT MENTION OF OBSTRUCTION	5781	BLOOD IN STOOL
53330	SITE UNSPECIFIED ACUTE WITHOUT MENTION OF HEMORRHAGE AND PERFFORATION - WITHOUT MENTION OF OBSTRUCTION	5789	HEMORRHAGE OF GASTROINTESTINAL TRACT, UNSPECIFIED
53331	SITE UNSPECIFIED ACUTE WITHOUT MENTION OF HEMORRHAGE AND PERFORATION - WITH OBSTRUCTION		

DENOMINATOR EXCLUSIONS STRATUM_GI_HEM

Exclude cases:

- with a principal ICD-9-CM diagnosis code for gastrointestinal hemorrhage or acute ulcer
- with a principal ICD-9-CM diagnosis code for trauma
- with a principal ICD-9-CM diagnosis code for alcoholism
- with a principal ICD-9-CM diagnosis code for anemia
- MDC 6 (diseases and disorders of the digestive system)
- MDC 7 (diseases and disorders of the hepatobiliary system and pancreas)
- transferred to an acute care facility (DISP = 2)
- with missing discharge disposition (DISP=missing), gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing), or principal diagnosis (DX1=missing)

[Appendix G – Trauma Diagnosis Codes](#)

Alcoholism diagnosis codes: (ALCHLSM)

2910	ALCOHOL WITHDRAWAL DELIRIUM	30392	OTHER AND UNSPECIFIED ALCOHOL DEPENDENCE
2911	ALCOHOL AMNESTIC SYNDROME	30393	OTHER AND UNSPECIFIED ALCOHOL DEPENDENCE
2912	OTHER ALCOHOLIC DEMENTIA	30500	NONDEPENDENT ABUSE OF DRUGS, ALCOHOL ABUSE
2913	ALCOHOL WITHDRAWAL HALLUCINOSIS	30501	NONDEPENDENT ABUSE OF DRUGS, ALCOHOL ABUSE
2914	IDIOSYNCRATIC ALCOHOL INTOXICATION	30502	NONDEPENDENT ABUSE OF DRUGS, ALCOHOL ABUSE
2915	ALCOHOLIC JEALOUSY	30503	NONDEPENDENT ABUSE OF DRUGS, ALCOHOL ABUSE
29181	OTHER SPECIFIED ALCOHOLIC PSYCHOSES, ALCOHOL WITHDRAWAL	4255	ALCOHOLIC CARDIOMYOPATHY
29182	ALCOH INDUCE SLEEP DISOR	5710	ALCOHOLIC FATTY LIVER
29189	OTHER SPECIFIED ALCOHOLIC PSYCHOSES, OTHER	5711	ACUTE ALCOHOLIC HEPATITIS
2919	UNSPECIFIED ALCOHOLIC PSYCHOSIS	5712	ALCOHOLIC CIRRHOSIS OF LIVER
30300	ACUTE ALCOHOL INTOXICATION	5713	ALCOHOLIC LIVER DAMAGE, UNSPECIFIED
30301	ACUTE ALCOHOLIC INTOXICATION	53530	ALCOHOLIC GASTRITIS, WITHOUT MENTION OF HEMORRHAGE
30302	ACUTE ALCOHOLIC INTOXICATION	53531	ALCOHOLIC GASTRITIS, WITH HEMORRHAGE
30303	ACUTE ALCOHOLIC INTOXICATION	9800	TOXIC EFFECT OF ALCOHOL, ETHYL ALCOHOL
30390	OTHER AND UNSPECIFIED ALCOHOL DEPENDENCE	9809	TOXIC EFFECT OF ALCOHOL, UNSPECIFIED ALCOHOL
30391	OTHER AND UNSPECIFIED ALCOHOL DEPENDENCE		

Anemia diagnosis codes: (FTR6EX)

2800	SECONDARY TO BLOOD LOSS [CHRONIC]	2851	ACUTE POSTHEMORRHAGIC ANEMIA
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